#04-7984
P.L. 8400137

From: "Michael Feldman" <Michael.Feldman@nwtox.com>
To: "Walter Vogl" <WVogl@samhsa.gov>
Date: 7/12/04 5:27PM
Subject: FR Doc. 04-7984

Dear Walt,

Here is an additional comment on the oral fluid section of the NPRM. Thanks for giving us the opportunity to share our comments.

Mike

Please note that my new e-mail address is michael.feldman@nwtox.com

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To: DEPARTMENT OF HEALTH AND HUMAN SERVICES

Substance Abuse and Mental Health Services Administration

Attention: Walter Vogl Ph.D.,
Drug Testing Section,
Division of Workplace Programs, CSAP,
5600 Fishers Lane,
Rockwall II, Suite 815,
Rockville, MD 20857

Comments to Federal Register FR Doc. 04-7984

From: David Day, David Kuntz Ph.D., Michael Feldman Ph.D.

Northwest Toxicology, Lab*One*, Inc.

Re: Mandatory Guidelines for Federal Workplace Drug Testing Programs

Oral Fluid Testing for THC

Date: 07/09/2004

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Detection of quantifiable levels of THCA in oral fluid of donor samples is now possible. At Northwest Toxicology, we have years of experience detecting low levels of drugs in biological samples (eg, hair, blood, vitreous, etc). We have developed a method to detect THCA in oral fluids from previously reported positive (using the existing THC criteria) oral fluid samples. Conversely, THCA does not appear to be present in previously reported negative samples. We are in the process of preparing our initial studies for publication, and anticipate submission within 30 days.

In the preamble to the proposed guidelines, HHS states: " In order to protect Federal workers from incorrect test results for marijuana, the Department proposes that a second biological specimen, a urine sample, will need to be collected under the current Guidelines at the same time the oral fluid specimen is obtained, primarily for the purpose of testing for marijuana when the oral fluid specimen is positive for marijuana. The Department will revise the Guidelines when the science is available to differentiate between actual use and environmental contamination.'

The Department should revise the proposed Guidelines because the science is now available. The detection of THCA and THCA-glucuronide has now been

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accomplished and disrupts the current notion that THC detection in the oral fluid is due to absorption of smoke only. We ask that this requirement be dropped from this proposal.

The statement "the active component of marijuana does not diffuse into oral fluid" is false. THC and THC metabolites will diffuse into the oral fluid from blood. Three articles are listed that support the claim: Hawks (1982), Samyn et al. (1999), and Niedbala et al. (2001). Each of these articles contains limitations in the experimental design which prevent the detection of diffusion of THC into oral fluid. Steady state kinetics are not reached in these experiments, proper lag times for diffusion are not allowed and incorrect conclusions have been reached regarding diffusion of THC and THC metabolites from blood to the oral fluid.

As we have also discovered, detection sensitivity needs to be much lower than with techniques used in these studies. Because the elimination of THCA is slow from blood, with a 36 hours half life, blood levels of this compound over the course of days is near steady state (when daily dosing occurs). Steady state equations can be used to estimate the amount of drug Q that will diffuse over time t (sec) relative to the concentration in the blood (C). These equations require the use of an estimated permeation coefficient (P in cm/sec) for THCA. An equation of the form $Q = CAtP$ is

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used to estimate the amount of diffusion to expect (A is the surface area of the oral cavity). An estimate for the permeability coefficient of THCA-Glucuronide is 1×10^{-8} cm/sec. Using the parameters for C=30 ng/mL (blood concentration of THCA after smoking), A = 100 cm^2, (surface area of the oral mucosa), t = 5 minutes (300 seconds collection time of the oral fluid) and solving for the amount of THCA expected in the oral fluid Q. Q=9 pg/mL, a very low level. It is clear that detection levels in the picogram range are required to make the determination when blood levels are below 30 ng/mL (A permeation constant of 1×10^{-8} cm/sec for THCA-glucuronide is used). Clearly from the data reported by Niedbala, Samyn, Perez-Reyez, and Hawks, determination of THCA in oral fluid was not performed at an adequate sensitivity in any of these studies. With the correct dosing, time course and detection sensitivity, detection of THC in these types of experiments should occur. Certainly, with the correct experimental design diffusion should be measurable. Our data clearly shows THCA in the all of the previously reported positive oral fluid samples tested, with 23 of 26 having quantifiable levels above 10 pg/mL.

Sincerely,

David Day, David Kuntz Ph.D., Michael Feldman Ph.D.

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